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WORK PLAN FOR SUBSURFACE GEOARCHAEOLOGICAL SURVEY OF THE BUILDING 207/231 AREA, PRESIDIO OF SAN FRANCISCO, CITY AND COUNTY OF SAN FRANCISCO, CALIFORNIA

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14 November 2005

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WORK PLAN FOR SUBSURFACE GEOARCHAEOLOGICAL SURVEY OF THE BUILDING 207/231 AREA, PRESIDIO OF SAN FRANCISCO, CITY AND COUNTY OF SAN FRANCISCO, CALIFORNIA

1.0 INTRODUCTION

This work plan for a subsurface geoarchaeological survey was developed in response to a Corrective Action Plan (CAP) (MACTEC 2005) that proposes to remove contaminated materials from the Building 207/231 Area, located in the Presidio of San Francisco (hereafter referred to as project area). A subsurface geoarchaeological survey will be conducted in order to comply with Section 106 of the National Historic Preservation Act (NHPA), as amended, which requires consideration of the effects of an undertaking on properties eligible for inclusion in the National Register of Historic Places. This document (1) briefly describes the nature and scope of the project; (2) provides background information about the surface and subsurface deposits in the project area; (3) reviews the pre-field logistical issues; (4) discusses the general field approach; and (5) describes the specific field survey methods and sampling techniques.

2.0 REMEDIATION PROJECT DESCRIPTION

Situated at the north end of the San Francisco peninsula, the project area lies within a portion of the Presidio of San Francisco, just south of a recently restored segment of Crissy Field Marsh. The CAP proposes to remediate the project area by excavating and removing contaminated soils, sediments, and other materials from specific locations (Figure 1).

3.0 GOALS OF THE SUBSURFACE GEOARCHAEOLOGICAL SURVEY

The CAP proposed that a pre-remediation archaeological investigation be conducted to avoid or minimize potential adverse impacts to unidentified, NPHP-eligible archaeological resources that might result from the remediation excavations. To accomplish the investigation, MACTEC requested the Anthropological Studies Center (ASC) at Sonoma State University develop this geoarchaeological survey work plan.

The need for a subsurface survey was prompted in part by the fact that the present ground surface in the project area consists of artificial fill and man-made structures, which have effectively buried the former "natural" ground surface. Thus, any intact archaeological deposits in the project area are buried. Given these substantial landscape changes, a subsurface geoarchaeological survey is the most efficient and effective way to identify buried archaeological deposits. At the same time, the survey can assess the

Figure 1. Proposed geoarchaeological trenches for the Building 207/231 Area

general structure, composition, integrity, and stratigraphic sequence of the natural and/or cultural subsurface deposits. The general goal of the subsurface survey is to characterize past human use of the project area in relation to the events and/or conditions that lead to the formation of the present landscape. The survey will achieve this by revealing former landscapes and identifying prehistoric or historic-era archaeological remains that may be present. Because human occupation in the region is generally accepted to span the last 13,000 years, this geoarchaeological survey will focus on Holocene and late Pleistocene deposits.

4.0 SURFACE AND SUBSURFACE DEPOSITS

This section summarizes the existing information about landscape history, soils, and geology, as well as previous studies that are relevant for understanding the surface and subsurface deposits in the project area.

4.1 Historic Landscape

Historic maps from the mid-1800s to the early 1900s show that sand dunes, a tidal marsh and slough, and the channel of unnamed creek that drained Tennessee Hollow were located in portions of the project area before it was artificially filled. These natural geomorphic features are important because prehistoric human settlements in the region are frequently located along stream banks or near the margins of San Francisco Bay. The presence of nearby prehistoric sites CA-SFR-6 and CA-SFR-129 provides direct evidence that this settlement pattern was practiced in the area that is now the Crissy Field portion of the Presidio (Clark 2001; Jones and Stokes 2002).

Although small portions of areas classed as sensitive for historic-era remains (i.e., the quartermaster complex and the 19th century quartermaster depot and landfill) may be contained within the project area (Basin Research Associates 2001), Jones and Stokes (2002) estimated its historical sensitivity to be relatively low.

4.2 Surface Deposits

Existing soil and geologic maps provide general information about the nature and extent of project area surface deposits. Surface soils are classified as urban land in the northern two-thirds of the project area and as orthents of the cut and fill urban land complex in the southern one-third (USDA 2004). Knudsen et al. (2000) have mapped the quaternary geologic units at the surface of the project area, which mainly consist of artificial fill over bay mud, with a very small area of Quaternary alluvium in the extreme southwest corner. Together, these studies indicate a substantial amount of artificial fill has been deposited in the project area. This fill may cover prehistoric remains and may contain redeposited archaeological materials.

4.3 Subsurface Deposits

At least two studies have examined the subsurface stratigraphy of the project area. Basin Research Associates, Inc. (2001) produced a coring program report based on the

results of 88 cores in and around the Building 207/231 Area. The report found no evidence of prehistoric sites or cultural materials. Four of the nine cores in the project area were concentrated around Building 230 and returned positive results for historic-era cultural material. However, there are significant limitations to the site identification potential (especially prehistoric) possessed by this "soda-straw" method of subsurface investigation. Jones and Stokes (2002) mechanically excavated five trenches in the project area, four located north of Gorgas Avenue. None revealed any prehistoric archaeological material; one contained historic-era artifacts.

The subsurface stratigraphy documented in these reports was used to inform the present field investigations. Unfortunately, the reports contain very little pedogenic analysis of subsurface sediments, critical for a geoarchaeological understanding of the project area. Moreover, the Jones and Stokes report found that "a more extensive trenching program would be needed to document the many land-filling events on the lower post" (2002:95).

ASC staff geoarchaeologist, Graham Dalldorf, preliminarily examined selected cores generated by the coring program report of 2001. The assessment confirmed the presence of artificial fill and weakly-developed buried soils. The artificial fill is widespread, but highly variable in thickness—likely a reflection of the varied topography of the prehistoric dune and marsh landscape. The weakly-developed soils appear to be located on former dune surfaces that are cited by Meyer (2002) as archaeologically sensitive.

Based on this review of existing data, the project area is sensitive for both prehistoric and historic-era archaeological deposits and materials.

5.0 PRE-FIELD LOGISTICAL CONSIDERATIONS

This section provides information about logistical issues that must be addressed prior to fieldwork, including health and safety, underground utilities coordination, hazardous materials coordination, and trench safety.

5.1 Health and Safety

An approved health and safety plan (HASP) will be prepared by MACTEC prior to the commencement of fieldwork and all project personnel will follow its requirements. Regular safety meetings will be held in the field to ensure that applicable health and safety precautions are followed.

5.2 Underground Utilities Coordination

The trench locations shown in Figure 1 were developed in coordination with Presidio Trust and MACTEC personnel with special attention to the location of underground utilities; Jim Henderson of MACTEC provided utilities drawings. Every effort has been made to place the proposed trench locations to avoid underground utilities. ASC personnel will mark the excavation areas indicated in the CAP for

Underground Service Alert (USA) inspection, along with a 10-foot buffer zone around each area to increase the likelihood that all underground utilities are identified and to allow for some flexibility in the placement of the subsurface survey trenches. Presidio Trust personnel will notify the appropriate in-house utilities location service and arrange for USA to examine the project area.

5.3 Hazardous Materials Coordination

Excavations and the inspection or collection of archaeological materials may lead to exposure to hazardous materials. Most trench locations are located within an identified contamination area, as those areas are to be excavated during implementation of the CAP, potentially adversely impacting subsurface archaeological deposits that may be present. It is, therefore, assumed that much of the excavated sediment will contain hazardous materials. All ASC personnel who must enter the field excavation exclusion zone will have received the required hazardous materials training specified by the HASP.

In accordance with the HASP, qualified specialists from MACTEC and/or the Presidio Trust will be available during the excavations to monitor the level of potential contaminants in the air of trench spaces as well as deposits removed from the trenches to insure that the work is performed in conditions that conform to appropriate health and safety standards.

5.4 Trench Safety

The relatively high water table and resulting instability of trench sidewalls will demand a high degree of caution on the part of project personnel. In accordance with Federal Occupational Safety and Health Administration (OSHA) guidelines, project personnel will not enter any portion of a trench where the depth of the trench below ground surface (bgs) exceeds 4 feet (1.2 m). Project personnel shall be allowed to enter portions of trenches that are less than 4 feet (1.2 m) bgs if it is safe to do so. Trenches may also be "stepped down" so that the surrounding ground surface is lowered. In this instance, project personnel will not to enter any portion of a trench where the depth of the trench below the recently excavated lower "ground" surface exceeds 4 feet.

Trenches will be dewatered only as needed for the purpose of backfilling or in the event that a potentially significant archaeological find is made. If standing groundwater fills the base of a trench, sediments may be removed by mechanical excavation, but no project personnel will be allowed to enter the trench.

6.0 SUBSURFACE SURVEY APPROACH AND METHODS

This section discusses the methodological approach as well as specific field techniques that will be used for the subsurface geoarchaeological survey.

6.1 Methodological Approach

Archaeologists generally utilize pedestrian survey as their primary method of searching for unknown archaeological sites (Dunnel and Dancey 1983). Various environmental conditions demand the application of appropriate survey techniques and sampling strategies to maximize the probability that sites will be discovered (Schiffer, Sullivan, and Klinger 1978:8).

Buried sites generally lack visible and/or obtrusive features that indicate their presence to an observer in the field; consequently, pedestrian survey is usually ineffective for locating buried archaeological sites (Bettis 1992:120). If it is accepted that buried sites "are probably always underrepresented in survey samples" (Nance 1983:349), the difficulty of locating them can be confronted as a sampling problem in the survey or research design (McManamon 1984). Thus, archaeological studies should not only consider the possibility of buried sites, but also address the probability of discovering them in various portions of a study area. Given the depth of artificial fill noted above, mechanically excavated trenches will be the most efficient and effective means to identify subsurface archaeological deposits and to determine the stratigraphic sequence in the project area.

6.2 Exploration Trenches

The subsurface survey will be conducted by excavating a series of exploration trenches using a tractor-mounted backhoe with a standard 36-inch wide bucket. Trenches have been placed to maximize the artifact discovery potential while staying within the general bounds of the remedial units identified in the CAP (MACTEC 2005). The general location and overall size of the proposed trenches will be governed by the following principles:

1. Trenching is to be generally restricted to the locations where earth-disturbing activities are most likely to occur during implementation of the CAP.

2. Within the CAP excavation areas, trenches will be placed at locations considered to have the greatest potential to contain buried prehistoric archaeological deposits (i.e., stream banks, edges of marsh or slough), and/or at locations where the subsurface landform stratigraphy is expected to be most informative (i.e., contact between two or more deposits or landforms).

Given these considerations, trenching will be focused within the now buried, former floodplain of an unnamed creek that drains Tennessee Hollow and the sand dunes located along the north and south margins of the marsh/slough, as indicated by historic maps. The trenches will be oriented to avoid existing structures and underground utilities, while maximizing the opportunity for archaeological discovery; this will minimize the amount of material that may be generated from the excavations. The general locations of the proposed exploration trenches are shown in Figure 1. Table 1 summarizes the CAP remedial unit characteristics and the proposed trenches.

The precise location, size, and orientation of each trench will be determined in the field based on existing conditions and constraints, such as the most current information regarding the location of underground utilities, as well as the results of active or previous trenching. It is expected that most exploration trenches will be at least 1.0 m (3.3 ft.) wide, 1.4 m (4 ft.) deep, and 3.1 m (10 ft.) long.

Table 1. Remedial Unit Stratigraphic Characteristics

Remedial Unit Name	Surface Deposits	Subsurface Deposits*	Depth of Fill* bgs (ft/m)	Depth of Proposed Impact** bgs (ft/m)	Number of Proposed Trenches
Former Bldg. 207 Area	Artificial fill	Mixed alluvial and aeolian	5.0/1.5	7.5/2.3	2
Former Bldgs. 38, 38-A Area	Artificial fill	Alluvial?	14.0/4.3	10.0/3.0	2
Existing Bldg. 231 Area	Artificial fill and Quaternary Alluvium	Mixed alluvial and aeolian	2.5/0.8	10.0/3.0	4
Existing Bldg. 230 Area	Artificial fill	Mixed alluvial	3.0/0.9	5.5/1.7	1

All depth measurements are approximate. *Based on the nearest core or trench. **According to CAP.

Some trenches may extend to 9.1 m (30 ft.) in length, and short segments within a few trenches will extend to depth of about 4.6 m (15 ft.) or the maximum reach of the backhoe. It is anticipated that these trench segments will need to be excavated to this depth in order to reach late Pleistocene deposits. The longer and deeper trenches allow the explorations to respond to differences in the contours of the subsurface deposits and facilitate safe access and egress from the trenches (see Trench Safety and shoring issues above). ASC personnel will be responsible for directing the movement of the backhoe.

The excavation of a trench will be halted under any of the following conditions:

1. Bedrock or Late Pleistocene deposits are identified. Caution will be exercised to ensure that excavations do not fully penetrate the bay mud to eliminate the possibility of cross contamination of lower soil units.
2. Sidewall liquefaction begins to undermine adjacent areas.
3. Hazardous contaminant levels are detected in the excavated materials or air in the trench space by MACTEC or Presidio Trust personnel that exceed the requirement of Level D personal protection.
4. Archaeological materials or deposits are identified and sufficiently documented.

Each trench will be numbered according to a system provided by Presidio Trust personnel. The depth and general nature of deposits exposed in the trenches will be

recorded in the field, with additional attention given to those trenches that contained buried soil horizons and/or archaeological remains. Selected trenches may be drawn and described in greater detail if conditions allow. The trench locations will be plotted onto digital orthographic aerial photographs and recorded using a global positioning system (GPS). Presidio Trust personnel may collect samples from excavated trenches for environmental testing. Such samples, including quality assurance/quality control samples, will be collected and analyzed in accordance with the Presidio-wide Quality Assurance Project Plan (Tetra Tech 2001.)

Trenches will be backfilled as soon as they are recorded. The backhoe bucket will be used to tamp down the trench fill. A trench that must be left open overnight will be secured as required in the HASP. Excess soil and water will be containerized and profiled for disposal. Excess water that is determined to be uncontaminated will be disposed of in the sanitary sewer. The trench site will be restored as closely as possible to its original surface contour.

6.3 Stratigraphic Identification and Description

The natural and cultural stratigraphy will be identified by carefully examining the deposits exposed in the sidewalls of the subsurface survey trenches. Stratigraphic units (strata) will be identified on the basis of physical composition, superposition, relative soil development, and/or textural transitions. In the field, each stratum will be assigned a Roman numeral (I, II, III, etc.) beginning with the oldest or lowermost stratum identified in each trench. Buried soils (i.e., paleosols), representing formerly stable ground surfaces, will be identified in the field on the basis of color, structure, horizon development, bioturbation, lateral continuity, and the nature of the upper boundary (contact) with the overlying deposit (Birkeland et al. 1991; Retallack 1988).

The master soil horizons will be designated by upper-case letters (O, A, B, C, or R) preceded by Arabic numerals (2, 3, etc.) when the horizon is associated with a different stratum (i.e., 2Cu); number 1 is understood but not shown. Deposit(s) of artificial fill (Ap horizon(s)) will likely characterize the upper portion of trench sidewalls.

Combinations of these numbers and letters indicate the important characteristics of each major stratum and soil horizon; they are consistent with those outlined by Birkeland et al. (1991), Schoeneberger et al. (1998), and the Soil Survey Staff (1998). Trenches excavated into different landforms usually exhibit dissimilar stratigraphy, due to the diverse processes involved in each landform's formation. As a single trench may contain only a portion of the stratigraphy for the area, it will be important to compare and correlate the results from the excavations to construct the project area's stratigraphic sequence.

6.4 Identification and Collection of Natural and Cultural Materials

Archaeological artifacts will be identified by examining the deposits removed from the trenches using hand tools—such as hoes, rakes, picks, and shovels—and by inspecting the trench walls whenever it is necessary and safe to do so. These activities will be performed while each trench is being excavated and/or immediately thereafter. A

wet screening station will be established within the project area, at a safe distance from the trenching. Where archaeological materials are suspected or observed in the sediment, a sample will be placed in a plastic bucket and taken to the station where it will be wet screened through 3-mm (1/8 inch) mesh screen in order to recover the remains. The station will be fenced to exclude non-authorized personnel.

While the wet screening process will assist in decontaminating artifacts, it will also result in contaminated byproducts, such as water and loose sediment (see Appendix A). The wet screening area will contain a settling basin to capture potentially contaminated byproducts, which will be handled, stored, and disposed of according to the HASP and Presidio waste storage policies. A suitably qualified individual will be present to ensure compliance with the HASP. To minimize the quantity of potentially contaminated water that must be disposed of in this way, the process will—to the degree feasible—recycle screening water through the settling basin.

Samples of soil, sediment, and/or charcoal may be collected from appropriate contexts (i.e., preferably non-contaminated) for radiocarbon dating or other analysis. The samples and archaeological materials will be collected, handled, and curated in accordance with *Protocols for Contaminated Archaeological Artifacts on Presidio Park Lands* (Praetzellis 2005); see Appendix A. In the unlikely event that human remains are discovered, work will halt in the area of the discovery. Project personnel will treat any human remains and any potentially associated artifacts at the site with appropriate care and respect. As required by provisions of the California Public Resources Code (PRC) Sections 5097.98 and 5097.99, the archaeologist will contact the San Francisco County Coroner. The archaeologist will also notify Leo Barker, the responsible NPS official. If the remains are of Native American origin, the remains themselves as well as any funerary objects, sacred objects, or items of cultural patrimony encountered will be treated under the Native American Graves Protection and Repatriation Act of 1990.

7.0 TECHNICAL REPORT

A technical report describing these investigations will be prepared. The report will contain the following sections: executive summary, introduction, project goals, remediation project description, a review of previous studies, description of fieldwork, fieldwork results, conclusions, recommendations, and references cited. The report will also contain maps and profile drawings at appropriate scales, as well as a catalog of artifacts uncovered and discarded or retained.

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APPENDIX

Protocols for Contaminated Archaeological Artifacts

PROTOCOLS FOR CONTAMINATED ARCHAEOLOGICAL ARTIFACTS ON PRESIDIO PARK LANDS

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PROTOCOLS FOR CONTAMINATED ARCHAEOLOGICAL ARTIFACTS ON PRESIDIO PARK LANDS

1.0 PURPOSE

This document provides guidance to archaeologists on Presidio park lands who may encounter artifacts contaminated with metals (e.g., lead) and organic contaminants (e.g., TPH, PCBs, and PAHs). Its purpose is to assist archaeologists in the safe handling, processing, and curation of these remains.

These protocols must be used in concert with professionally prepared health and safety plans (HASPs) for both field and lab work. It is essential that field archaeologists read and comply with the HASP for their work site.

These protocols, together with the HASP, will help the archaeologist:

- assess which artifacts should be collected and which recorded then discarded in the field
- safely handle and package artifacts to be returned to the lab
- safely process and store artifacts.

2.0 ARTIFACT COLLECTION AND RETENTION POLICIES

The protocols for ITC's archaeological program (ITC 1996) contain guidance for archaeologists monitoring earth-moving in the Presidio and the treatment of artifacts that result from these activities. This document requires collecting a representative "sample" of monitoring finds and retaining all materials from archaeological contexts that are deemed eligible to the National Register of Historic Places. The procedures include the following statements:

- When a discovery is made in the course of monitoring an excavation and the discovery consists of individual artifacts or artifact scatters that lack a meaningful context… the cultural materials collected in such a situation will be packaged together in an archival-quality reclosable plastic bag and labeled under this general provenience.
- Materials not intended for permanent curation… (i.e., pieces of modern trash) will be quantified, briefly described, then discarded.
- Cultural materials that are found to be contaminated that are non-porous will be decontaminated to the levels considered safe [for handling and storage].
- Cultural materials found to be contaminated but which cannot be decontaminated to levels considered safe due to their porosity, will be packaged and labeled with appropriate warnings. (ITC 1996:9.3)

2.1 Deciding to Retain or Discard Artifacts

ITC's protocols assume that all potentially important materials can and should be retained. As a practical matter, the expense and hazards associated with curating a large number of contaminated artifacts or a single highly contaminated object may be disproportional to the items' long research or interpretive value as defined in the project research design. While some items may retain a level of residual contamination that would justify their discard once adequately documented in the lab, others can be simply recorded in the field. This decision is at the discretion of the appropriate Presidio park archaeologist.

When artifacts are discovered, the archaeologist (and, where appropriate, the archaeological collections specialist) shall

- apply the decision tree (Figure 1), which specifies the conditions under which archaeological artifacts will be retained by field personnel and passed on to the archaeological laboratory for treatment;
- handle, package, and store artifacts according to the procedures outlined in this document.

3.0 ARTIFACT HANDLING, PROCESSING, AND CURATION PROCEDURES

This section guides archaeological personnel in their handling of artifacts at each phase of work: discovery, processing, and storage/curation.

3.1 Artifact Material Types

Figure 2 lists the types of materials that can be anticipated on Presidio archaeological sites. Artifacts made of these substances may have come into contact with hazardous materials and become contaminated. The extent of this contamination depends, among other factors, on the porosity of the material of which the artifacts are made. These material types vary greatly in their relative porosity. While the contamination of a non-porous artifact may be limited to the object's surface and removed with relative ease, a porous artifact may retain residual contamination within its interstices. Consequently, the safe handling and treatment of contaminated objects is, in many cases, contingent on their porosity as well as on the contaminant type (i.e., metals contamination is less likely to result in residual contamination post-cleaning as compared to organic contamination).

3.2 Handling Artifacts during Fieldwork, Processing, and Curation

Figure 3 describes the manner in which materials of various porosities are to be handled in the field and lab during processing and curation. While these procedures are intended to minimize harm to workers, the artifacts themselves may suffer if the procedures are not thoughtfully applied. In most cases, standard professional archaeological and conservation practices can be applied. The following guidance addresses special problems that may arise from the particular requirements of the HASP or the handling procedures presented in this document.

3.2.1 Decontamination in the field

Contaminated artifacts must be decontaminated before they are forwarded to the lab. An exception may be made for material of intrinsic value whose treatment requires procedures that can only be carried out in the lab. In this case, the materials must be packaged appropriately and clearly labeled with the type of suspected contaminant. All artifacts suspected of being contaminated must be packaged to confine the contaminant before they enter the lab.

3.2.2 Removing surface dirt

As sediments may contain contaminants, it is important to remove excess surface dirt from artifacts in the field by

- brushing or scraping, as appropriate
- washing with plain water
- cleaning with a solution of Alconox or similar mild detergent, as appropriate

Cleaning with a detergent will, in many cases, decontaminate non-porous and some semi-porous artifacts and allow them to be handled using standard archaeological methods. It is important not to soak porous or semi-porous material or to remove surface treatments (such as decals) during washing or cleaning.

Plain water used to free artifacts of surface dirt may be reused by allowing sediments to accumulate in a series of settling tanks and recirculating the water by a pump. This process of extracting artifacts from their encasing matrix may create or release byproducts that may themselves contain contaminants. These byproducts include

- contaminated water used to clean artifacts
- sediments that accumulate in the settling tanks
- ferrous metal encrustations

These byproducts must be handled, stored, and disposed of according to the HASP and Presidio waste storage policies.

3.2.3 Devitrification

Glass hydrates as it is exposed to the air and eventually may devitrify, becoming crazed and flaky. The scale that is created in this process may be harmful and can enter the skin through contact. Glass that shows signs of devitrification—such as iridescence—should be handled with disposable gloves.

3.2.4 Water-saturated materials

Porous and semi-porous materials from waterlogged environments should not be dried in the field. Excess liquids that may contain contaminants should not be collected and must be handled in accordance with HASP procedures. However, the artifact's current humidity level should be maintained while it is transported to the lab. In the case of fresh water saturation, this may be achieved by adding de-ionized water.

3.2.5 Discarding artifacts in the field

In some cases, a field decision may be made to discard certain artifacts rather than decontaminating and returning them to the lab. In this case, the materials may be simply recorded appropriately and placed back into the excavation.

3.2.6 Lab processing

In most cases, artifacts will have been decontaminated in the field before entering the lab. If contaminated materials must be brought into the lab they must be separated from the remainder of the collection. The type of suspected contaminant must be clearly marked on the outside of the box or other container. These artifacts must be handled in accord with the HASP.

When it is necessary to clean and decontaminate artifacts in the lab, arrangements must be made to dispose of any contaminated byproducts before they are created. These byproducts must be handled, stored, and disposed of according to the HASP and Presidio waste storage and disposal policies. When the decision is made in the lab to discard contaminated artifacts, these items must also be disposed of according to Presidio waste storage and disposal policies.

Contaminated artifacts may only be submitted for curation in exceptional circumstances and with the permission of the Presidio archaeologist. In this case, the artifacts must be packaged to confine the contaminant and the type of contamination must be clearly marked on the outside of the box or container.

3.2.7 Curation

Federal curation standards at 36CFR79 require that archaeological remains be handled, stored, cleaned, and conserved in a manner that protects them from breakage and possible deterioration from adverse temperature and relative humidity, visible light, ultraviolet radiation, dust, soot, gases, mold, fungus, insects, rodents and general neglect, as well as preserving data that may be studied in future laboratory analyses.

In most cases, contaminated artifacts will have been treated in the field or lab. Thus, handling these materials after curation should not require special measures in addition to standard archaeological curation practices. Any contaminated artifacts must be handled in accord with the HASP.

REFERENCES

36 Code of Federal Regulations Part 79
Curation of Federally Owned and Administered Archaeological Collections (Authority: 16 US Code 470 et seq.)

International Technology Corporation (ITC)
1996 Archaeological Protocols, IT Archaeological Program, Presidio of San Francisco, San Francisco, California. IT Corporation, Martinez, CA, prepared for USA Corps of Engineers, Sacramento. CA.

Figure 1. Decision Procedures for the Collection of Archaeological Artifacts

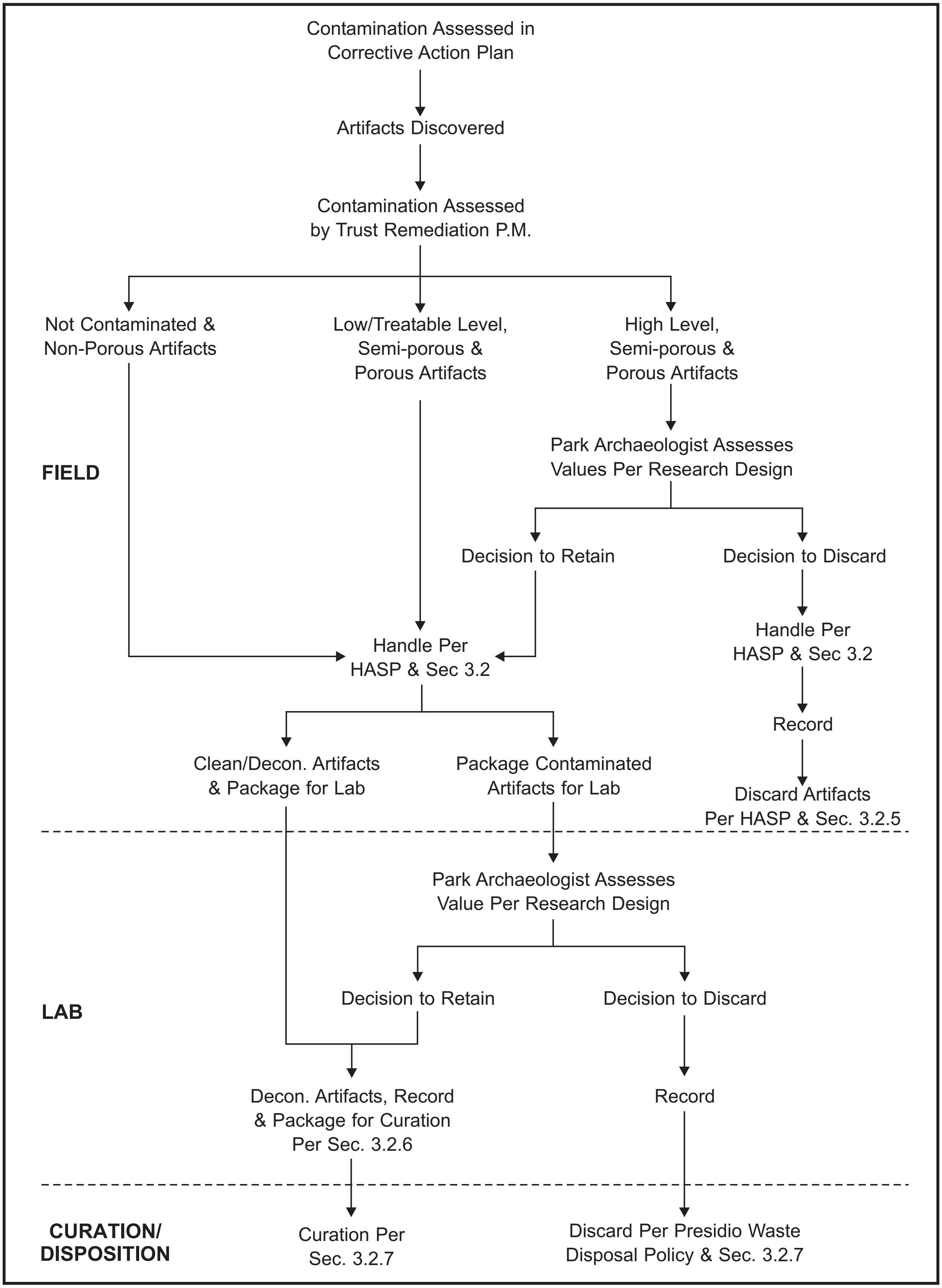

Figure 2. Relative Porosity of Archaeological Remains

	RELATIVE POROSITY		
	Porous	***Semi-porous***	***Non-porous***
ORGANIC REMAINS			
Bone	X		
Leather	X		
Nut/seed	X		
Textile/fabric	X		
Wood/basketry/charcoal	X		
Antler/horn		X	
Ivory		X	
Shell		X	
INORGANIC REMAINS			
Earthenware	X		
Brick (adobe)	X		
Brick (low fired)		X	
Brick (high fired)			X
Ferrous metals			X
Non-ferrous metals			X
Glass			X
Porcelain			X
Stone			X
Stoneware			X

Figure 3. Handling Requirements for Archaeological Material by Work Phase

	Discovery/Field	Processing/Lab	Curation
Porous (e.g., bone[1], fabric)	Handle in accordance with HASP procedures and section 3.2 above; remove excess soil; place in plastic or paper bag or other container to protect structural integrity; if potentially contaminated, label per section 3.2.1 above; transport to lab.	Determine if residual contamination exists; handle in well ventilated environment in accordance with HASP procedures and section 3.2.6 above; rinse with water if not too fragile or clean by hand; standard conservation methods may be applied to non-contaminated materials; dispose of contaminated byproducts appropriately.	Handle cleaned items in accordance with HASP procedures and section 3.2.7 above; most items may be curated in a collection facility that meets the standards at 36CFR79 although some may warrant special conservation and/or storage measures; some items may retain residual contamination that would justify their discard once adequately documented.
Semi-porous (e.g., shell, low-fired brick)	Handle in accordance with HASP procedures and section 3.2 above until cleaned with water, a mild detergent (e.g., Alconox, Simple Green, etc.), and a brush to decontaminate; place in plastic or paper bag; transport to lab.	Determine if residual contamination exists; handle cleaned items in accordance with HASP procedures and section 3.2.6 above; standard conservation methods may be applied to non-contaminated materials.	Handle cleaned items in accordance with HASP procedures and section 3.2.7 above; curate in a collection facility that meets the standards at 36CFR79.
Non-porous (e.g., porcelain, glass, stone, metal)	Handle in accordance with HASP procedures and section 3.2 above until cleaned with water, a mild detergent (e.g., Alconox, Simple Green, etc.), and a brush to decontaminate; place in plastic or paper bag; transport to lab.	Handle cleaned items in accordance with HASP procedures and section 3.2.6 above; standard conservation methods may be applied.	Handle cleaned items in accordance with HASP procedures and section 3.2.7 above; curate in a collection facility that meets the standards at 36CFR79.

[1] The treatment of human remains is described in section 5.4 of ITC's *Archaeological Protocols*. Potentially contaminated human remains should be handled with disposable gloves. Contaminated or not, all human remains must be handled and stored respectfully while they remain under Presidio Trust control.